Rationale

Mathematics consists of skills that students will use every single day in their lives both now and in the future. Math skills are used when preparing food, shopping at the grocery store, traveling from place to place, etc. In early childhood, it is important for students to receive a strong mathematical foundation that prepares them for more complex mathematical skills. At this age, students need to learn the basics such as reading and writing numbers, counting, and performing basic operations such as addition and subtraction. However, the problem is at this age students often learn how to memorize math facts and do not learn the process behind the mathematical concepts and skills. This can lead to many misconceptions later on which is why it is important to involve students in hands-on activities that are relatable to their everyday lives at this age. This allows students to process and understand the more abstract concepts that are being taught.

This instructional design will consist of lesson plans that have been written following the Basic Lesson Planning Model as described in *Designing Instruction for Contextual Teaching and Learning*. This lesson plan model includes identifying the skills to be taught, key objectives, procedures that introduce, develop, and apply the skills, and both formal and informal assessments that are used both during and after the lesson (Chiarelott, 2006). This unit is designed to be taught using the constructivist theory as learning will be hands-on, interactive, and based on student interests. This model was chosen because it best fits the needs of the highly energetic learners in my classroom. It will allow me to keep my lessons clearly focused and also allow me to incorporate the hands-on learning activities that my students crave.

The subunit in this instructional design introduces students to the concept of addition. This builds on students' prior knowledge as they have already learned about numbers and how to decompose them into pairs. This subunit is extending that knowledge by allowing students to see that the decomposed numbers make up the other number using the process of addition. In order for students to really understand this skill, students will be actively engaged in hands-on activities that are relevant to their lives. This will allow students to be involved more and understand the importance of learning the skill. According to the National Council of Teachers of Mathematics, "An engaging and encouraging climate for children's early encounters with mathematics develops their confidence in their ability to understand and use mathematics." In addition, they also believe that these experiences help children to develop skills such as curiosity, imagination, flexibility, inventiveness, and persistence. These skills are both helpful to students now and in the future ("Mathematics in Early Childhood Learning ", 2013).

Unit Outcomes

- CCSS.Math.Content.K.OA.A.1: Students will be able to represent addition problems using objects, mental images, drawings, etc. within 10 with 90% accuracy. [comprehension, application]

- CCSS.Math.Content.K.OA.A.2: Students will be able to solve addition word problems within 10 by using objects or drawings to represent them with 90% accuracy.[application]

- CCSS.Math.Content.K.OA.A.3: When given a number within 10, students will be able to decompose number more than one way into pairs and record each with an equation with 100% accuracy. [evaluation]

- CCSS.Math.Content.K.OA.A.4: Students will find the number that when added makes 10 when given the numbers 1-9 and write the corresponding equation with 90% accuracy.

Pre-Assessment

Because of many kindergartners having varying experiences prior to school, it will be important to ensure that this pre-test is given in a way that all students can understand. The pre-test will need to be read aloud to the students to ensure that all students are able to understand the questions. In addition, students will need to be encouraged to try their best since they may have not been taught this concept before. I have designed this pre-test to be given in small groups so that I am able to ensure that all of the students are staying on-task and are able to follow along as I am reading the questions.

Pre-Test

l. Mikayla goes to her Grandma's house. Grandma tells her she may have 5 pieces of

fruit. There are lots of oranges and apples. How many of each can she take?

_____   +   _____   =

_____   +   _____   =

2. Madi went to the store and bought 3 dolls. Her sister Morgan gives her I more doll

to play with. What type of math problem would this be?

a. Addition   b. Subtraction

3. Show answers on ten frames.

6 + 2 = _____   5 + 4 =_____

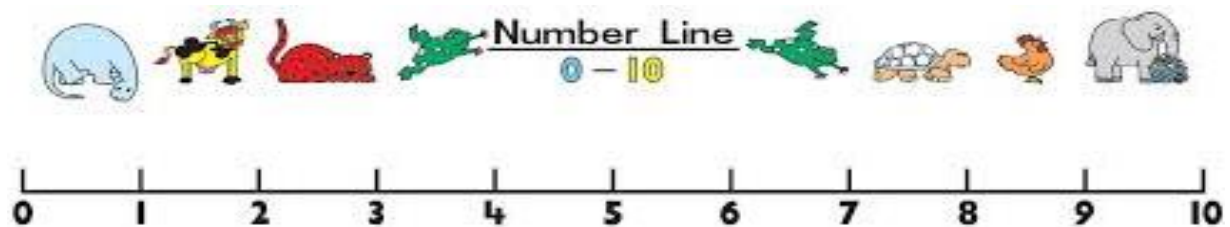|				

4. 3 + 2 = _____   5. 6 + _____ =

6. David has 4 balls. At recess, James gives him 2 more balls to play with. How many

balls does David have? Draw pictures to show this.

7. 6 + 2 =   _____

How would you show this problem on the number line?

Number Line
0 – 10

| | | | | | | | | | |
0   1   2   3   4   5   6   7   8   9   10

Lesson Plan #1

What is Addition?

Concept/Skill To Be Learned: The meaning of addition
Unit Outcomes: When given a number within 10, students will be able to decompose number more than one way into pairs and record each with an equation with 100% accuracy. Students will be able to solve addition word problems within 10 by using objects or drawings to represent them with 90% Students will be able to solve addition problems within 10 by using objects or drawings to represent them with 90% **Lesson Outcomes:** When given a number within 10, students will be able to decompose number more than one way into pairs and record each with an equation with 90% accuracy.
Time Allotment: 30 minutes
Materials/Resources Needed: SmartBoard Computer Worksheet Counters Part+Part=Whole Mats (for struggling students)

Procedures:
1. Call the students to the rug and ask, "If we went to the store and had to buy 3 apples and 2 oranges. How could we figure out how many pieces of fruit we bought altogether?"
2. Ask students, "If we had to buy 5 pieces of fruit, how many apples and oranges could we buy of each?"
    A. Ask students how we could show our work for this question.
    B. After students have come up with the number pairs, write each pair on the board.
3. Ask students to explain what they do with each number pair in order to reach the number 5.
4. Tell students that they are adding each number pair together in order to get the answer 5.
5. Explain to students that this process is called addition in mathematics. Addition is when we add together and combine numbers to make a bigger number.
6. Tell students that there is a symbol that we write to show that we are adding to numbers together. Write a + on the board.
7. Using one of the number pairs, show students how to write an addition problem.
8. Using the SmartBoard, model to students how counters can be used to represent the addition problem.
9. Tell students that they are going to practice decomposing numbers in word problems and then write the addition number sentence for each pair.
10. Pass out worksheets.

A. Walk around and assist students as needed.
B. Collect worksheets when students are finished.
11. Call students back to the rug and say, "You guys did an awesome job today! Who can tell me what addition means again?"
   A. Reinforce that addition means joining two numbers together to reach a bigger number.
   B. Ask a student to write the addition symbol on the board.
   C. Tell students that tomorrow they will learn different strategies that they can use to solve addition problems.

Assessment/Evaluation Strategy: Observation, Work Sample
Answers to class discussion
Observations while walking around during work time
Worksheet answers

Part, Part, Whole Mat

Whole

Part

Part

Name _____

1. Maria went to the store and bought 6 pieces of

candy. How many pieces can be chocolate? How

many can be gum?

_____ + _____ =

_____ + _____ =

2. James had 4 toys to share with his friends. How

many toys can be cars? How many can be trucks?

_____ + _____ =

_____ + _____ =

3. Decompose the number 8.

_____ + _____ =

_____ + _____ =

4. Decompose the number 10.

_____ + _____ =

_____ + _____ =

5. Decompose the number 9.

_____ + _____ =

_____ + _____ =

Lesson Plan #2

What strategies can I use when adding?

Concept/Skill To Be Learned: Multiple addition strategies
Unit Outcomes: Students will be able to represent addition problems using objects, mental images, drawings, etc. within 10 with 90% accuracy. **Lesson Outcomes:** Students will be able to represent addition problems using objects, mental images, drawings, etc. within 10 with 80% accuracy. Students will be able to identify multiple addition strategies.
Time Allotment: 30 minutes
Materials/Resources Needed: SmartBoard Computer Worksheet Counters Number Lines Snap Cubes Addition Strategies Flip Book (already put together) (item can be found at https://www.teacherspayteachers.com/Product/Addition-Hands-On-Strategies-FlipBook-FREEBIE-1468207) Ten Frames

Procedures:
    Call the students to the rug and ask, "Who remembers what we learned about yesterday during math time?"
  1. Ask students, "Right. We learned how to add numbers together. We also learned how number pairs are added together to make a bigger number."
      A. Ask students what tools we can use to help us when adding.
  2. Tell students that there are many strategies we can use when adding numbers.
  3. Pass out addition strategy flipbooks.
  4. Ask students to turn to the first page. Model with students how to use their fingers to solve the problem. Use another problem to model with students to ensure understanding.
  5. Ask students to turn to the next page. Show students the snap cubes and model how to complete the problem. Point out how this strategy is similar to using counters.
  6. Have students turn to the next page. Demonstrate on big number line on the board how to use this with students. Show students how to make "hops" with the frog to reach each number. Do several more problems with students to ensure understanding.
  7. Ask students to turn the page. Draw a ten frame on the board. Students are already very familiar with this from number decomposition. Show them how to place the dots to solve the problem.
  8. Ask students to turn the page. Explain to students that this page is for counters and that

they will need to draw a picture when they get back to their seats of themselves using counters.

9. Ask students to turn to last page. Model how students can draw pictures to answer the problem. Tell students to go back to their seats and the pictures for the last two pages.
10. When students are finished, pass out worksheets.
11. Walk through the worksheet with students. Pick a strategy for them to use for each problem.
    A. Walk around and ensure that students are using different strategies.
    B. Model to students as needed.
12. When worksheet is completed, have students put away all materials. Instruct students that they need to keep their addition strategies flipbook in their folder.
13. Ask students to recall addition strategies that were learned today.

Assessment/Evaluation Strategy: Observation, Work Sample
Answers to class discussion
Observations while walking around during work time
Worksheet Answers

Name _____

1. 4 + 1 = _____

2. 3 + 2 = _____

3. 6 + 2 = _____

4. 3 + 3 = _____

5. 5 + 3 = _____

6. 1 + 6 = _____

7. 3 + 1 = _____

8. 5 + 5 = _____

Lesson Plan #3

What strategies works best for me?

Concept/Skill To Be Learned: Solving addition problems within 10	

Concept/Skill To Be Learned:
Solving addition problems within 10

Unit Outcomes:
Students will be able to represent addition problems using objects, mental images, drawings, etc. within 10 with 90% accuracy.
Students will be able to solve addition word problems within 10 by using objects or drawings to represent them with 90% accuracy.

Lesson Outcomes:
Students will be able to represent addition problems using objects, mental images, drawings, etc. within 10 with 100% accuracy.
Students will be able to solve addition word problems within 10 by using objects or drawings to represent them with 75% accuracy.

Time Allotment: 30 minutes

Materials/Resources Needed:
Worksheet
Counters
Number Lines
Snap Cubes
Addition Strategies Flip Book (already put together) (item can be found at
https://www.teacherspayteachers.com/Product/Addition-Hands-On-Strategies-FlipBook-FREEBIE-1468207)
Ten Frames

Procedures:
1. Ask students to name/explain the addition strategies that we have learned about.
2. Ask students if they think any of the strategies is better/easier than the others to use.
3. Remind students that they should always get the same answer no matter which strategy they use.
4. Ask students why they think learning how to add can be important.
5. Ask students about when they use addition in their everyday lives.
6. Tell students that they are going to practice using the addition strategies more today and can see which ones they like the best.
7. Ask students to get out their addition strategies flipbooks out of their folders.
8. Write an addition problem on the board. Ask students to solve each using a specific addition strategy.
   A. Walk around and ensure that students are using the strategies correctly.
   B. Model the answer to each problem using the strategy.
9. Ask students if they think that they like some of the strategies more than the others.
   A. Explain to students that it's OK if someone else likes one of the strategies that they do not like.
10. Tell students that they are going to get a chance to practice using the strategies that they

like the most now.
11. Explain to students that they are also going to try out their addition strategies using work problems. Model this word problem on the board to students: "Suzy went to the park with 3 friends to play. 2 more friends came to play. How many friends were at the park?"
    A. Ask students to help explain how addition can be used to solve this problem. Have students help you write the number sentence for this problem.
12. Pass out worksheets and instruct students to begin using the strategies that they like.
13. Tell students to answer the first four questions on their own. When finished, read them each of the last 4 questions. Allow time for students to find the answer to each. Ask them to put a finger on their nose when they are finished to ensure all students are ready to move on.
    A. Walk around and assist students as needed.
    B. Encourage students to explain the strategies they are using and why they like them.
14. Collect worksheets.
15. Tell students that they did an awesome job today. Explain to students the importance of addition and the strategies that they are learning. Connect addition to the students' everyday lives by using the situations they indicated earlier.

Assessment/Evaluation Strategy: Observation, Work Sample
Answers to class discussion
Observations while walking around during work time
Discussions during independent work
Worksheet answers

Name _____

1. 1 + 1 = _____   2. 4 + 2 = _____

3. 5 + 1 = _____   4. 2 + 2 = _____

5. Angel goes shopping and puts 4 juices in the cart. Her mom puts 2 more in the cart.

How many juices are there?

_____ + _____ =

6. Brian has 5 toy trucks. James comes over to play and brings 4 more trucks. How

many trucks are there?

_____ + _____ =

7. Zane's mom gave him 3 grapes for snack. He grabbed 3 more grapes. How many

grapes are there?

_____ + _____ =

8. Jake went to the beach and found 2 seashells. His sister Amber found 8 more.

How many seashells are there?

_____ + _____ =

Lesson Plan #4

Can I solve addition problems on my own?

Concept/Skill To Be Learned: Solving addition problems within 10
Unit/Lesson Outcomes: Students will find the number that when added makes 10 when given the numbers 1-9 and write the corresponding equation with 100% accuracy.
Time Allotment: 30 minutes
Materials/Resources Needed: Worksheet Counters Number Lines Snap Cubes Addition Strategies Flip Book (already put together) (item can be found at https://www.teacherspayteachers.com/Product/Addition-Hands-On-Strategies-FlipBook-FREEBIE-1468207) Ten Frames *Mission: Addition* by Loreen Landy
Procedures: 1. Call students over to the rug and read the book *Mission: Addition* by Loreen Landy. 2. During reading, ask students about the different strategies that are being used. 3. Ask questions to draw students to the real life connections in the story. 4. When finished, tell students that they have had lots of practice with addition already. 5. Tell students that they are going to use their knowledge to figure out which numbers add up to the number 10. Tell students that they will be given one number and then must use their strategies to find what number is missing to the addition problem. Model using the number 1 to students. Show using several strategies. 6. Tell students that they are going to be completing this on their own to show what they know. 7. Ask students to go to their seats and get out addition strategies flipbooks and gather items needed to use the strategies that they like best. 8. Pass out worksheets. 9. Remind students that this is on their own and there should be no talking. 10. Walk around but do not help students with reaching answers. Remind students of the strategies that they can use and encourage them to try another one if they are stuck. 11. Collect worksheets. 12. Tell students that tomorrow they are going to learn how to use addition to solve story problems.
Assessment/Evaluation Strategy: Observation, Work Sample Answers to class discussion Observations while walking around during work time Discussions during independent work + Worksheet Answers

Name _____

1. 1 + _____ = 10   2. 6 + _____ = 10

3. 5 + _____ = 10   4. 3 + _____ = 10

5. 8 + _____ = 10   6. 4 + _____ = 10

7. 7 + _____ = 10   8. 9 + _____ = 10

9. 2 + _____ = 10

Post-Assessment

      The post-test will be the same as the pre-assessment that was previously given. I have always been taught the importance of keeping the pre and post assessments the same so that you can truly measure if the students now grasp and understand the content. This allows me to ensure that I have taught well enough that the students now understand the questions from the pre-assessment that they did not know before. It also allows me to accurately measure their growth as well. I would give this post-assessment in the same way as the pre-assessment. It would be best to give this assessment in small groups because of the needs of kindergartners. This ensures that all students are focused on the task at hand and allows for an accurate read of their growth.

Post-Test

1. Mikayla goes to her Grandma's house. Grandma tells her she may have 5 pieces of

fruit. There are lots of oranges and apples. How many of each can she take?

_____ + _____ =

_____ + _____ =

2. Madi went to the store and bought 3 dolls. Her sister Morgan gives her 1 more doll

to play with. What type of math problem would this be?

a. Addition   b. Subtraction

3. Show answers on ten frames.

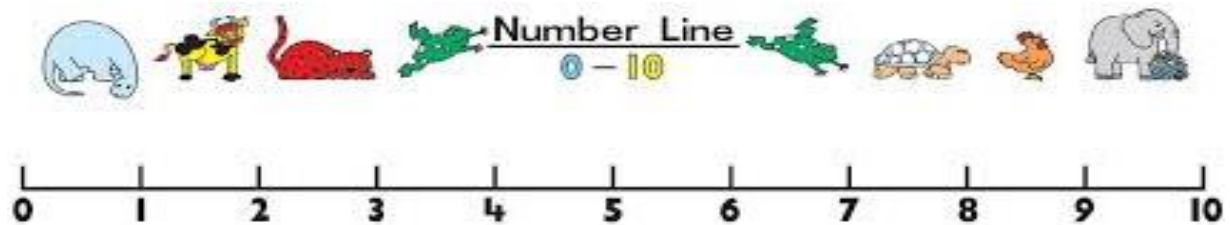6 + 2 = _____   5 + 4 =_____

4. 3 + 2 = _____   5. 6 + _____ =

6. David has 4 balls. At recess, James gives him 2 more balls to play with. How many

balls does David have? Draw pictures to show this.

7. 6 + 2 =   _____

How would you show this problem on the number line?

Number Line
0 – 10

0 1 2 3 4 5 6 7 8 9 10

References

Chiarelott, L. (2006). *Curriculum in context: Designing curriculum and instruction for teaching and learning in context.* Belmont, CA: Thomson Wadsworth.

Mathematics in Early Childhood Learning. (n.d.). Retrieved April 2, 2015, from

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